1. (Five Times Amended) A replication defective recombinant adenovirus comprising

ITR sequences,

an encapsulation sequence, and

a heterologous DNA sequence,

wherein E1 genes have been rendered non-functional by deletion, and wherein either E2 or E4 genes, but not both, have been rendered non-functional by deletion.

2. (Three Times Amended) [An] A replication defective recombinant adenovirus [according to claim 1] comprising

ITR sequences,

an encapsulation sequence,

and a heterologous DNA sequence,

wherein E1 genes have been rendered non-functional by deletion, wherein E2 or E4 genes have been rendered non-functional by deletion, and wherein adenovirus sequences are from a canine adenovirus.

3. (Four Times Amended) [An] The replication defective recombinant adenovirus according to claim 1, wherein adenovirus sequences are from a human group C adenovirus.

6. (Four Times Amended) [An] The replication defective recombinant adenovirus according to claim 1, wherein late genes L1-L5 have been rendered non-functional by deletion.

9. (Four Times Amended) [An] The replication defective recombinant adenovirus according to claim 1, wherein E3 genes have been rendered non-functional by deletion.

10. (Four Times Amended) [An] The replication defective recombinant adenovirus according to claim 9, wherein L5 has been rendered non-functional by deletion.

11. (Three Times Amended) [An] A replication defective recombinant adenovirus [according to claim 1, further] comprising

ITR sequences,

an encapsulation sequence,
and a heterologous DNA sequence,
and a functional E3 gene under the control of a heterologous promoter,

wherein E1 genes have been rendered non-functional by deletion, and wherein E2 or E4 genes have been rendered non-functional by deletion.

12. (Four Times Amended) [An] The replication defective recombinant adenovirus according to claim 1, wherein the heterologous DNA sequence is selected from the group consisting of a therapeutic [genes] gene and [genes] a gene encoding an antigenic [peptides] peptide.

13. (Five Times Amended) [An] The replication defective recombinant adenovirus according to claim 12, wherein the heterologous DNA is a therapeutic gene which encodes a product selected from the group consisting of [enzymes] an enzyme, a blood [proteins] protein, [hormones] a hormone, [lymphokines] a lymphokine, a growth [factors] factor, a neurotrophic [factors] factor, [apolipoproteins] an apolipoprotein, a dystrophin, a minidystrophin, a tumor suppressor [genes], and a coagulation [factors] factor.

37CFR1.663

14. (Three Times Amended) [An] The replication defective recombinant adenovirus according to claim 1, wherein the heterologous DNA [encodes] is transcribed into an antisense [sequence] RNA, which is complementary to a cellular mRNA and blocks translation of the cellular mRNA into protein in an infected cell.

15. (Three Times Amended) [An] The replication defective recombinant adenovirus according to claim 12, wherein the heterologous DNA encodes an antigenic peptide [capable of generating] which generates an immune response against a [microorganisms] microorganism, a [tumors] tumor, or a [viruses] virus when introduced into a human.

16. (Three Times Amended) [An] The replication defective recombinant adenovirus according to claim 15, wherein the [gene] heterologous DNA encodes an antigenic peptide [specific for] which generates an immune response against a virus selected from the group consisting of [the] an Epstein

Barr virus, [the] an HIV virus, [the] a hepatitis B virus, and [the] a pseudo-rabies virus when introduced into a human.

37 CFR 1.663

17. (Three Times Amended) [An] The replication defective recombinant adenovirus according to claim 12, wherein the heterologous DNA sequence further comprises a [promoter] sequence which permits expression of the heterologous DNA sequence in an infected cell.

18. (Three Times Amended) [An] The replication defective recombinant adenovirus according to claim 12, wherein the heterologous DNA sequence further comprises a signal sequence, which directs a product encoded by the heterologous DNA sequence into a secretory pathway of a target cell.

19. (Three Times Amended) A cell line comprising, integrated into its genome, [the] adenovirus genes necessary to complement [a] the replication defective recombinant adenovirus according to claim 1, wherein one of the complementing genes is under the control of an inducible promoter.

20. (Four Times Amended) [A] The cell line according to claim 19, wherein it comprises, in its genome, an E1 gene and an E2 gene wherein the E2 gene is under the control of an inducible promoter.

21. (Four Times Amended) [A] The cell line according to claim 20, wherein it additionally comprises an E4 gene from an adenovirus, wherein the E4 gene is placed under the control of an inducible promoter.

22. (Four Times Amended) [A] The cell line according to claim 19, wherein it comprises, in its genome, an E1 gene and an E4 gene wherein the E4 gene is under the control of an inducible promoter.

23. (Three Times Amended) [A] The cell line according to claim 19, further comprising a glucocorticoid receptor gene.

24. (Four Times Amended) [A] The cell line according to claim 19, wherein it comprises E2 and E4 genes and the E2 and E4 genes are under the control of an inducible promoter.

25. (Three Times Amended) [A] The cell line according to claim 19, wherein the inducible promoter is an LTR promoter of MMTV.

26. (Four Times Amended) [A] The cell line according to claim 19, [wherein it comprises] comprising a gene encoding the 72 K protein of E2, wherein the 72 K protein encoding gene is placed under the control of an inducible promoter.

27. (Three Times Amended) [A] The cell line according to claim 19, wherein it is [obtained] constructed from [the] human embryonic kidney cell line 293.

37 CFR 1.663

28. (Three Times Amended) A composition comprising [a] the replication defective recombinant adenovirus according to claim 1 and a pharmaceutically acceptable vehicle.

29. (Three Times Amended) A composition comprising [a] the replication recombinant adenovirus according to claim 10 and a pharmaceutically acceptable vehicle.

37 CFR 1.663

30. (Three Times Amended) [A] The composition according to claim 28, wherein the vehicle is pharmaceutically acceptable for an injectable formulation.

31. (Three Times Amended) A replication defective recombinant adenovirus comprising

ITR sequences,

an encapsulation sequence, and

a heterologous DNA sequence,

wherein E3 and E4 genes have been rendered non-functional by deletion.

32. (Twice Amended) [An] The replication defective recombinant adenovirus according to claim 31, wherein late genes L1-L5 have been rendered non-functional by deletion.

33. (Twice Amended) [An] The cell line according to claim 19, comprising open reading frames ORF6 and ORF6/7 of E4, wherein the open reading frames are under the control of an inducible promoter.

34. (Four Times Amended) A replication defective recombinant adenovirus [consisting essentially of] comprising

ITR sequences,

an encapsulation sequence,

a heterologous DNA sequence, and

[all or part of] an E2 region,

wherein the E2 region [or part thereof] is the sole adenoviral [gene] early region.

35. (Four Times Amended) A replication defective recombinant adenovirus [consisting essentially of] comprising

37 CFR 1.663

ITR sequences,

an encapsulation sequence,

a heterologous DNA sequence, and

[all or part of] an E4 region,

wherein the E4 region [or part thereof] is the sole adenoviral [gene] region.

36. (Amended) A replication defective recombinant adenovirus comprising

ITR sequences,

an encapsulation sequence, [and]

a heterologous DNA sequence, and

an E4 coding region,

wherein [the] E4 genes have been rendered non-functional by one or more modifications outside [the] of the E4 coding region.

37. (Amended) [An] The replication defective recombinant adenovirus according to claim 36, wherein the E4 genes have been rendered non-functional by deletion of all or part of the promoter region for E4 transcription.

38. (Amended) [An] The replication defective recombinant adenovirus according to claim 36 wherein the E4 genes have been rendered non-functional by substitution of one or more bases in the E4 genes.

39. (Amended) [An] The replication defective recombinant adenovirus according to claim 38 wherein the E4 genes have been rendered non-functional by one or more genetic [modification(s)] modifications within regions responsible for [the] E4 gene expression or transcriptional regulation, or both[, whereby production of said genes is according to a desired mode of regulation].